

formed, the size of the closed communication network can be flexibly changed and when the encryption communication is applied to the communication within the closed communication network, the exchange of information having the high confidentiality can be performed.

The specification and drawings are, accordingly, to be regarded in an illustrative rather than a restrictive sense. It will, however, be evident that various modifications and changes may be made thereto without departing from the broader spirit and scope of the invention as set forth in the claims.

WHAT WE CLAIM IS

1. A group communication method in which a plurality of communication terminals form a closed communication network and perform communication, said group communication method comprising

a step in which a calling message including group identification information is broadcast from a first communication terminal to a large number of unspecified communication terminals, and

a step in which the first communication terminal receives response messages broadcast from other communication terminals and including the group identification information,

wherein the closed communication network is formed of the first communication terminal and at least one communication terminal which transmits the response message within a given time after the calling message is transmitted, and

a group communication is performed by the communication message using the group identification information.

2. A group communication method according to claim 1, wherein the group communication method includes a step in which the first communication terminal stores an address of the transmission source terminal of the response message received within a given time after transmitting the calling message as a group constituting terminal corresponding to the group identifier, and a step in which a control message indicative of the start of the group communication is transmitted to the group constituting terminal from the first communication terminal.

3. A group communication method according to claim 2, wherein the group communication method includes a step in which, before the transmission of the control message indicative of the start of the group communication, an encryption key to be used in the group communication is informed from the first communication terminal to the group constituting terminal.

4. A group communication method according to claim 3, wherein the response message includes a public key of a transmission source terminal, and the first communication terminal informs transmission source terminals of respective response messages by encrypting an encryption key to be used in the group communication by the public key.

5. A group communication method according to claim 3, wherein the group communication method further includes a step in which respective group constituting terminals including the first communication terminal respectively measure an encryption key change timing at random and when time reaches the encryption key change timing before receiving a keep-alive message from other terminal, the keep-alive message including the group identifier is broadcast, a

step in which the terminal which becomes a transmission source of the keep-alive message informs a transmission source terminal of the response message to the keep-alive message of a new encryption key, and a step in which the terminal which becomes transmission source of the keep-alive message transmits a control message which indicates the start of the group communication after the lapse of a given time from the transmission of the keep-alive message, wherein the encryption key to be used in the group communication is changed over in response to the transmission of the control message.

6. A group communication method which performs communication by forming a closed communication network with a plurality of communication terminals, the group communication method comprising a step in which a calling message for forming the group broadcast from other communication terminals is received, a step in which a communication terminal which has a will to participate in the group broadcasts a response message including group identification information which the calling message indicates, and a step in which the calling message received from other communication terminal and a terminal address which indicates a transmission source of the response message are stored as an address of a group constituting terminal corresponding to the group identifier, wherein a closed communication network is formed of the communication terminal which becomes the transmission source of the calling message and at least one communication terminal which transmits the response message within a given time after the transmission of the calling message, and group communication is performed by the communication message using the group identification information.

7. A group communication method according to claim 6, wherein the communication terminal which receives the calling message for forming the group from other communication terminal displays group kind information indicated by the calling message on a display screen and broadcasts the response message in response to an input manipulation indicating the participation of a terminal user to the group.

8. A group communication method according to claim 2, wherein when the communication terminal receives a communication message indicating the leaving from the group from other communication terminal, the transmission source terminal of the message is excluded from the group constituting terminals and when a state in which no group constituting terminals except for the own terminal are present, the group communication is finished.

9. A group communication method according to claim 1, wherein the calling message includes information whether group communication is to be opened or not, and when the group communication is opened, a control procedure necessary for adding a group constituting terminal between the constituting terminal of the closed communication network formed in an initial state and a newly participating communicating terminal is executed.

10. A communication terminal equipment which performs a group communication with other communication terminals comprising  
a transmission/reception circuit for transmitting and receiving a communication message,  
a display device,

an input device manipulated by a user,  
a storage part which stores a connection control program for controlling a transmission/reception of the communication message, and  
a processor which executes the connection control program, wherein  
the processor broadcasts the calling message including group identification information to a large number of unspecified communication terminals in response to an user input from the input device, stores an address of the transmission terminals of the response message including the identification information received by the transmission/reception circuit, forms a group between the communication terminal equipment and the transmission terminal of the response message received within a given time after transmitting the calling message, and performs a control operation such that the group communication is performed using the group identification information.

11. A communication terminal equipment according to claim 10, wherein when the calling message from other terminal equipment is received by the transmission/reception circuit, the processor displays group kind information included in the calling message on the display device and broadcasts a response message including the group identification information in response to user input from the input device.